

violently the gelatine would froth, and the surface become covered with small bubbles, which would greatly interfere later with the counting of the colonies) all the organisms attached to the surface of the sponge would be removed. Now the sponge being left in the tube must necessarily obscure part of the gelatine surface; moreover, the interstices becoming soaked with gelatine, colonies would certainly develop within the sponge itself and escape detection, whilst it is quite inconceivable that gentle rotation would suffice to detach even all those organisms which are adherent even to the surface of the sponge.

Wall surfaces deprived of micro-organisms in the manner described above were subsequently sprayed with distilled water infected with different pathogenic bacteria, and after sufficient time had elapsed for these surfaces to dry, the effect of various disinfectants was tried. Numerous investigations are also recorded of the use of creolin, carbolic acid, and mixtures of the latter with solutions of corrosive sublimate. The effect of exposure to high temperatures, in apparatus specially constructed for the purpose, has also been tried, whilst the disinfection of sewage matters with lime is also carefully considered, and a large number of experiments recorded with the typhoid and cholera organisms.

The following interesting account is given as an illustration of the success which can be achieved in disinfection on a large scale. An epidemic of diphtheria broke out in a small village in Germany and proved particularly fatal amongst the children, indeed so alarming was its progress, that the Burgomaster was led to suggest the disinfection of the whole village. A public meeting was held and the inhabitants were instructed as to the nature of the epidemic, and the possibility of checking it by the combined action of every household. Public funds were devoted to the purchase and distribution of the requisite disinfectants, and during three days the whole place is described as smelling of carbolic, whilst in all directions windows and doors were to be seen wide open, a very unusual sight in the country, and more especially in the month of February when this occurred. The work of disinfection was carried on most systematically, every article which could not be either washed or baked was treated with a 5 per cent. solution of carbolic acid. In short, no efforts were spared to thoroughly disinfect everything, and the result was that although the epidemic before the commencement of this disinfecting crusade was steadily gaining ground, it suddenly stopped. This must be considered as a tribute to the sagacity and energy of the inhabitants; for, as Prof. Maschek points out, experience teaches us to expect a gradual decline, due to the possible weakening of the virus, so that towards the end of an epidemic the number of bad cases is lessened and recoveries are more frequent.

In conclusion the words of M. Duclaux may be appropriately quoted: "Les études sur les antiseptiques n'ont gagné que de s'encombrer de résultats qui se contredisent les uns les autres, et entre lesquels on ne peut faire un choix, précisément parcequ'ils ont été souvent obtenus en dehors des conditions d'une étude précise. Il faut donc abandonner cette méthode, scruter avec de plus en plus de soin la phénomène, faire de la science, en un mot." This "*faire de la science*" is precisely the spirit in which Prof. Maschek has carried out his experiments; the immense care with which they have been conducted, the ungrudging labour bestowed upon them should render his results a most valuable contribution to the subject of disinfection. It is only to be regretted that they are not published in a form in which they would be more likely to become known and appreciated.

GRACE C. FRANKLAND.

NO. 1200, VOL. 46]

AN ETHNOGRAPHICAL SURVEY OF THE UNITED KINGDOM.

A CIRCULAR letter, which we have been asked to print, has just been issued on behalf of the Committee appointed by the British Association to organize an ethnographical survey of the United Kingdom. The Committee consists of Francis Galton, F.R.S., J. G. Garson, M.D., and E. W. Brabrook, F.S.A., representing the Anthropological Institute; Edward Clodd, G. L. Gomme, F.S.A., and Joseph Jacobs, M.A., representing the Folklore Society; H. S. Milman, Director S.A., George Payne, F.S.A., and General Pitt-Rivers, F.R.S., representing the Society of Antiquaries of London; Joseph Anderson, LL.D., Secretary of the Society of Antiquaries of Scotland; and A. C. Haddon, M.A., Professor of Zoology at the Royal College of Science of Dublin. The following is the circular letter:—

SIR,—The above-named Committee, in pursuance of the object for which they have been delegated by the Society of Antiquaries of London, the Folklore Society, and the Anthropological Institute, and appointed by the British Association, propose to record for certain typical villages and the neighbouring districts—

- (1) Physical Types of the Inhabitants.
- (2) Current Traditions and Beliefs.
- (3) Peculiarities of Dialect.
- (4) Monuments and other Remains of Ancient Culture; and
- (5) Historical Evidence as to Continuity of Race.

As a first step, the Committee desire to form a list of such villages in the United Kingdom as appear especially to deserve ethnographic study, out of which a selection might afterwards be made for the Survey. The villages suitable for entry on the list are such as contain not less than a hundred adults, the large majority of whose forefathers have lived there so far back as can be traced, and of whom the desired physical measurements, with photographs, might be obtained.

It is believed by the Committee that such villages may exist in the districts with which you are acquainted, and, as you are eminently capable of affording help in this preliminary search, we have to request that you will do so by kindly furnishing the names of any that may occur to you, with a brief account of their several characteristics; mentioning at the same time the addresses of such of their residents as would be likely to support the Committee in pursuing their inquiry.

They would also be glad to be favoured with the names of any persons known to you in other districts to whom this circular letter might with propriety be addressed.

We are, Sir,

Yours faithfully,

FRANCIS GALTON, *Chairman*.
E. W. BRABROOK, *Secretary*.

All communications should be addressed to "The Secretary of the Ethnographic Survey, British Association, Burlington House, London, W."

NOTES.

THE Board of Trinity College, Dublin, on October 22 elected Dr. Arthur A. Rambaut, M.A., Royal Astronomer of Ireland, on the foundation of Dr. Francis Andrews. The election was made under the provisions of Letter Patent 32 George III., dated in 1792. The new Professor of Astronomy in the University of Dublin, graduated in 1881 as a Senior Moderator and Gold Medallist in Mathematics, since which period he has acted until now as Assistant at the Observatory at Dunsink

He is the author of several astronomical papers published in the Transactions of the Royal Irish Academy and of the Royal Dublin Society.

It is proposed that a portrait medal of M. Hermite, the eminent mathematician, shall be struck in commemoration of his approaching seventieth birthday. The circular asking for subscriptions is signed by a number of well-known mathematicians.

THE following nominations have been made for the Council of the London Mathematical Society for the session 1892-3. The ballot will be taken on November 10. For President, A. B. Kempe, F.R.S.; Vice-Presidents, A. B. Basset, F.R.S., E. B. Elliott, F.R.S., Prof. Greenhill, F.R.S.; Treasurer, Dr. J. Larmor; Hon. Secs., Messrs. M. Jenkins and R. Tucker; other members, Mr. H. F. Baker, Dr. Forsyth, F.R.S., Dr. Glaisher, F.R.S., Mr. J. Hammond, Prof. M. J. M. Hill, Dr. Hobson, Mr. A. E. H. Love, Major Macmahon, F.R.S., and Mr. J. J. Walker, F.R.S. After the election of the Council Prof. Greenhill will read his Presidential Address.

IN consequence of the alterations in the rooms of the Chemical Society, the first ordinary meeting of the Society will be held on Thursday, November 17, at 8 p.m.

THE late Dr. C. A. Dohrn left his magnificent entomological collections, with the library connected with them, in trust to his son, Dr. H. Dohrn, who was directed to use them as the nucleus for the formation of a natural history museum in Stettin. Dr. H. Dohrn has now not only carried out his father's wishes, but has presented to his native town his own conchological collections and library.

THE Geologists' Association will hold a conversazione on Friday, November 4, in the Library of University College, Gower Street. Among the exhibits will be a series of photographs of the recent eruption of Mount Etna. These will be shown by Mr. F. W. Rudler.

MR. M. C. POTTER has been appointed to the Chair of Botany at the College of Science, Newcastle-on-Tyne.

THE annual meeting and conversazione of the Postal Microscopical Society took place at the Holborn Restaurant on the 20th inst. There was a good attendance, and many microscopical specimens were displayed. An address on polarized light was delivered by Mr. G. H. Bryan, the president.

THE following lectures will be given at the Royal Victoria Hall on Tuesday evenings during the coming month:—Nov. 1, Prof. A. H. Green, "Coal, what it is and how it was made;" Nov. 8, W. D. Halliburton, M.D., F.R.S., "The history of some famous epidemics;" Nov. 15, Hermann H. Hoffert, D.Sc., "Electric sparks and lightning flashes;" Nov. 22, Prof. Hall Griffin, "Among the hills of Asolo: an illustrated account of the poem 'Pippa Passes.'"

NATURALISTS who visit the Zoological Society's Gardens should not fail to go to the Insect House and see the Pratincole, which has lately been received, and is kept in a cage in this building. So far as we know, it is the first example of this curious form of plover that has ever been seen in captivity. The specimen in question does not, however, belong to the Pratincole of the south of Europe (*Glareola torquata*), which has sometimes occurred in this country, but to an allied African species—the Madagascar Pratincole (*Glareola ocularis*). The bird was obtained near Mombasa, in Eastern Africa, and presented to the society by Mr. R. MacAllister. It was carefully brought home, along with many other interesting specimens, from Zanzibar and the adjoining mainland by Mr. Frank Finn, F.Z.S., on his return from his recent expedition to that country.

A CORRESPONDENT from Tangier writes that during the recent mission to Fez of Sir Euan Smith, Mr. Walter H. Harris and Mr. Carleton, the interpreter, were informed by a cherif from Taflelt, cousin of the Sultan, and Governor over an extensive district, that there is no question as to the existence of dwarf tribes down the Dra, where they are very numerous. Sir Euan Smith was told of this statement, and probably had a talk with him. Mr. Harris intended to have taken a trip down the Dra to Akka, but was convinced from what he heard that such a trip would be an act of suicide. He however believes that he can get full information as to the dwarfs, and perhaps photographs, without going so far, and he has just left for a trip to the interior for two months. Herr E. G. Dönnenberg, who has been for some years engaged in pushing German trade in Marocco, and every year visits the principal cities, says that a year ago he saw in Marocco city from half a dozen to a dozen dwarfs, one of whom was accompanied by a dwarf wife. They were about 4 ft. high, and robust and well made, and were certainly not Moors who had been dwarfed by rickets, as they differed from the ordinary population of Marocco in appearance. Herr Dönnenberg's address is Tangier, and he states that he is ready to answer any queries that may be sent to him, but that he cannot add anything to what is here stated, as he did not ask any questions as to the dwarfs, not knowing that they were of interest. He goes to Marocco city before long, and will make it a point to find out all he can respecting them.

DURING the latter part of last week a depression lay over the North Sea, which spread both in size and intensity, causing strong northerly winds all over this country, with heavy gales and snow-fall in Scotland and the east of England, while in the southern districts the weather was fine and bright. The temperature was unusually low for the time of year, the mean temperature having in fact been considerably below the average on each day since the beginning of the month. The daily maxima have varied from 40° in the north to 52° in the south, with sharp frosts at night. On Sunday night the grass thermometer in London fell to 20°, while 25° in the shade were registered the next night in the north and west. During the early part of the present week, the area of high pressure in the west gave place to a depression, which arrived from off the Atlantic, causing cold easterly winds in the south with very heavy rains in the south-west of England; the weather over Scotland improved, although some snow showers continued to fall on the east coast. The *Weekly Weather Report*, issued on the 22nd instant, showed that the temperature of that week was much below the mean, the deficit ranging from 5° to 7°. Rainfall exceeded the mean in the east and north-east of England, but in all other districts there was a deficit. In the south-west of England there was still a deficit of about eight inches since the beginning of the year.

WE recently drew attention to a new meteorological journal published in Paris; we now note the appearance of a similar publication at Vilafranca del Panadés, in Spain. It is published on the 15th of each month, and contains a series of short elementary articles and notes, occupying only twelve small octavo pages. We hardly expect it to find many readers in this country, but hope it may awaken more interest in the subject in Spain, where practical meteorology is not at present on the same level as in other European countries.

THE Director of the Lyons Observatory, M. C. André, has published, under the title, "Relations des Phénomènes Météorologiques déduites de leurs Variations Diurnes et Annuelles," the results of the meteorological observations taken there for ten years ending 1890. The text and plates together occupy one hundred and sixty-eight large octavo pages, and, this volume will be found to be full of interest and instruction, to any one wishing either to take observations or to work up

the results. The title is well chosen, for the work treats of the relations which connect the different phenomena; it also gives all necessary precautions for ensuring the accuracy of the observations. Particular attention is paid to the important subject of diurnal and annual variations of the different elements, and to the various points to be noted, while the different theories of atmospheric electricity are explained at considerable length.

A BEAUTIFUL and instructive lecture experiment, illustrative of the conditions of the heated atmosphere which give rise to the mirage, is described by MM. J. Macé de Lépinay and A. Perot, in their "Etude du Mirage," which appears in the *Annales de Chimie et de Physique*. Water is poured into a long rectangular trough with glass slides, and covered with a layer of alcohol about 2 cm. thick, containing a trace of fluorescence. After a few hours, during which the alcohol diffuses slowly through the water, a flat beam of light is sent through the mixture at a very slight inclination to the horizon. Under these conditions a kind of garland of light is seen to traverse the liquid, due to a series of curvilinear deflections or "mirages" in the less highly refractive water below and total reflections at the upper surface of the alcohol.

PROF. W. CROOKES and Prof. W. Odling, in their report on the London Water Supply for the month of September, are able to give an excellent account of the 182 samples which they analyzed. All were found to be perfectly clear, bright, and well filtered. In respect to the smallness of the proportion of organic matter present, the character of the water furnished by the seven companies continued to be entirely satisfactory, the mean amount of organic carbon in the Thames-derived supply, for example, being '118 part, and the maximum amount in any single sample examined being but '145 part, in 100,000 parts of the water—numbers practically identical with those of the previous month, or '115 part for the mean, and 1'52 part for the maximum, amount. The average of the past six months, in the case of the Thames-derived supply, has amounted only to '116 part of organic carbon in 100,000 parts of the water, with a maximum, twice met with, of '152 part in any individual sample. The authors of the report do not expect that with the coming on of autumn and winter this low average will be much longer sustained. They note that the water supply to London is habitually at its best during the hot season, when a high quality of the supply is more especially called for.

AN interesting report on the Congress of the Library Association of Great Britain, held at Paris last month, was read on Tuesday before the Salford Royal Museum and Free Libraries' Committee. It was prepared by Mr. Alderman W. H. Bailey, who had naturally a good deal to say about the Paris Free Libraries. The governing bodies of almost all these institutions consider that there are many reasons why the libraries should be closed in the daytime when respectable artisans are engaged in earning their living. Books are therefore given out for two hours every evening of week days, generally from eight to ten o'clock, and also for two hours every Sunday morning. Mr. Bailey and the other members of the Congress were delighted with the Paris Libraries of Industrial Art, to which they devoted much attention. These Libraries—which, like the Free Libraries, are under municipal control—are in the artisan districts of Paris. Books, patterns, prints, drawings, and photographs are lent out. "Not only do house decorators," says Mr. Bailey, "find designs and books relating to work, but fan painters, porcelain modellers, designers of iron and bronze gates, medieval metal workers, cabinet makers, builders, and all workers in the constructive as well as the decorative arts may here find stimulus and draw inspiration from the wealth of examples on the shelves and walls." Free lectures are delivered in the winter on industrial art and science, and on the designs, books, and models in the Libraries.

VARIOUS experiments which are being made in France with a view to the improvement of the potato have attracted a good deal of attention in Australia. According to a statement recorded in the *Agricultural Gazette of New South Wales*, no fewer than 110 growers have obtained from a variety known as "Richter's Emperor," from twelve to twenty tons per acre, while the average is over fourteen tons to the acre. The Minister of Agriculture in New South Wales has approved of one hundred-weight each of this and any other three sorts highly reputed in France being imported for experimental purposes.

AT a recent meeting of a society of French agriculturists, it was stated by Baron Bertrand-Geslin, that ten or twelve years ago a disease appeared among the chestnut trees in central and north-western France, and destroyed them in great numbers. The wood, moreover, could not be utilized for heating purposes. At this juncture an enterprising person appeared, who bought up large quantities of this dead wood and sent it by canal to Nantes, where he had works established for utilizing it in the tanning of leather. Chestnut wood contains, in fact, 5 to 6 per cent. of tannic principles, whereas oak contains only 3 or 4. By the means adopted in these works the principles are concentrated in a sirupy liquid of great strength. This establishment has become very important; it absorbs annually thirty to thirty-five million kilogrammes of wood of these dead chestnuts from three departments traversed by the canal from Nantes to Brest, and expends about 120,000 francs per annum, a considerable reduction of the loss sustained by the landowners. It was mentioned, however, by M. Paul Becquerel, in reply to a question as to competition of the new extracts with bark, that those extracts, which are products allied to tan, do not give the same results, or leather of such good quality, and many tanners who have used them have returned to the old methods of tanning.

DR. R. MUNRO contributed to the *Times* of Monday a long and most interesting account of the recent discovery of an ancient lake-village in Somersetshire. The site is about a mile north of Glastonbury. Before excavations were begun, there were sixty or seventy low mounds, rising from one to two feet above the surrounding soil and measuring from twenty to thirty feet across. That the mounds were of archæological interest was first suspected by Mr. Arthur Bulleid, who began to excavate some of them during the present summer, and was soon rewarded by making striking discoveries. Woodwork corresponding to that of the crannogs of Scotland and Ireland has been exposed, and among the objects which have been recovered are some of bronze, a few of iron, and various specimens of pottery. Mr. Bulleid has also dug out "a splendid canoe neatly formed out of the trunk of a tree." This was found about a quarter of a mile from the settlement. It would seem that the inhabitants, after a period of long occupancy, indicated by a succession of superimposed hearths, were flooded out of their homes, for an accumulation of flood soil now covers the whole meadow to the extent of 12 inches to 18 inches in depth. The surrounding district is richly cultivated, but, in looking over an old map of the date of 1668, Dr. Munro found that it contained a lake called the "Meare Poole," into which three streams debouched, and from which the site of the present discovery could not be far distant. He suggests that this lake had larger dimensions in earlier times, and that when the settlement was founded the locality was a shallow lake or marsh. The old map represents the district lying immediately on the north-west borders of the "Meare Poole" as inhabited by the Belgæ. Dr. Munro is strongly inclined to think that the settlement belongs to the so-called Late Celtic period. This he would simply call the Celtic period, for there is no evidence, he believes, of earlier Celtic remains in Britain.

than those known as Late Celtic. "The style of art," he says, "which controlled the manufacture of Late Celtic objects involves such an enormous advance in metallurgical skill over that of the Bronze Age, that it is impossible to suppose the two are connected by any evolutionary stages in this country. From the standpoint of archæological research this interval, or rather *hiatus*, can only be bridged over by the supposition that the people who owned Late Celtic remains were newcomers and conquerors in Britain." Much light will no doubt be thrown on the question by the further exploration of these remarkable mounds.

A LIVELY correspondence on the subject of birds *versus* insects has been going on in the Malta papers. According to the *Mediterranean Naturalist*, the enormous increase of insectiferous pests during the last few years has caused the agricultural industries to decline to an alarming extent, and it is urged that the evil has now increased so much as to call for legislation. In the Maltese Islands there are no laws for the protection of birds, and, the lower classes of the Maltese being keen sportsmen, no opportunities are allowed to either the migratory or the indigenous species of increasing.

It was observed by Prof. Voit that when dogs were fed exclusively on bread they daily lost albumen, though not weight; the body becoming more watery and the hæmoglobin of the blood diminishing. This matter has been recently further investigated in his laboratory by Herr Tsuboi. Of three rabbits, one was fed with milk, rolls, and some hay; another with much hay; the third with potatoes. The last had more water in muscles and blood, and less hæmoglobin than the first. In another experiment (with like results) one of two cats was fed with meal and fat, another with bread and some meat extract. Again, three rabbits were fed with potatoes, the first with iron added, the second with serum, the third with blood. The last was found to have most solid matters in muscles and blood, and most hæmoglobin. It is not (the author points out) the amount of food by itself alone that determines the result, otherwise, in the fasting state, the hæmoglobin would be least, whereas it is the same as with good feeding. It is rather the insufficient composition of the food, the too small amount of albumen, with excess of starch-flour that has the injurious effect.

THE phosphoscope of Becquerel is a well-known instrument, enabling one to observe the phosphorescence of some substance when the exciting light is gone. It is designed to be used with sunlight. M. Lenard has devised an instrument (*La Nature*) for use with the electric spark. To the armature of a Foucault interrupter in an induction coil, is attached a light wooden rod, having at its end a piece of blackened pasteboard, which is thus driven up and down before a spark-interval between two brass knobs connected with the coil and a condenser (added to intensify the spark). The body to be examined is placed close behind the interval, so that it is uncovered very quickly after the spark passes. Some curious phenomena are observed. The short duration of the spark makes the screen seem at rest, and some thousandths of a second after one sees a luminous body behind where it was; so that at first sight one might think the screen opaque to the spark, but transparent for the phosphorescent light, an illusion due to the persistence of luminous impressions. Some bodies, such as various carbonates of lime, behave very much alike in this apparatus and in Becquerel's; some are favoured in the latter, and on the other hand, crystals of arragonite, which are invisible after solar illumination, give a faint reddish light after the spark. Various experiments are described. The most curious results are furnished by the remarkable substance, asaron. In a Crookes tube this gives a bright light, it gives also a distinct glow in the ultraviolet spec-

trum of the spark; but in the phosphoscope it is absolutely dark. The vibratory movement ceases immediately with the excitation.

THE new number of the *Internationales Archiv für Ethnographie* (Band v., Heft 4) consists mainly of the first part of what promises to be an elaborate paper (in German) on the inhabitants of the Nicobar Islands, by Dr. W. Svoboda. In October, 1886, while the German corvette, *Aurora*, lay in the harbour of Nangcauri, Dr. Svoboda had many opportunities of seeing the natives, and Mr. E. H. Man gave him facilities for the thorough study of a splendid collection of ethnographical objects from various parts of the group. Afterwards he extended his knowledge of the subject by reading books which dealt with it, and by visiting the ethnographical museums of Berlin and Vienna. The results he is now bringing together, and those of them embodied in the present contribution show that he is not only a good observer but that he knows how to state facts clearly and concisely. The paper is illustrated with coloured plates and woodcuts.

THE British Institute of Public Health has now an official quarterly journal, called *The Journal of State Medicine*. It is published by Charles Griffin and Co. The second number has appeared, and contains original papers on the following subjects:—lead in articles of food, by Prof. William R. Smith; points in the ætiology of typhoid fever, by Edmond J. McWeeney; chemical bacteriology of sewage, by W. E. Adeney; and new method of sewage purification, by W. Kaye Parry.

A NEW and revised edition of the late Prof. Moseley's well-known "Notes by a Naturalist on H.M.S. *Challenger*," has been issued by Mr. John Murray. It includes an excellent portrait, which vividly reminds us of the great loss inflicted on science by his premature death.

MESSRS. WHITTAKER AND CO. have published the first part of a work entitled "Dissections Illustrated: A Graphic Handbook for Students of Human Anatomy," by C. Gordon Brodie. The plates are drawn and lithographed by Percy Highley. The work will be completed in four parts. The present part deals with the upper limb, and includes seventeen coloured plates.

A SECOND edition of "A Short Manual of Inorganic Chemistry," by Dr. A. Dupré and Dr. H. W. Hake (Charles Griffin and Co.), has been issued. The authors have endeavoured to bring the statement of facts up to date without increasing the bulk of the work, and to remove those errors to which their attention has been drawn.

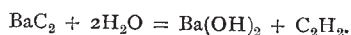
A RE-DETERMINATION of the mechanical equivalent of heat has been made by M. C. Miculescu at the Sorbonne. An account of the method appears in the *Annales de Chimie et de Physique* for October. The method was that of water friction at constant temperature. The liquid was enclosed in a cylindrical vessel with three envelopes. Water was kept circulating round the innermost one at such a rate that the difference of temperature of the water at entrance and exit was constant as measured by a thermopile. The heat thus derived from the water inside could be estimated by the quantity of water passed through. The water inside was stirred by vanes mounted on an axial shaft kept rotating by a gramme machine of 1 horse-power running at 1200 revolutions per minute. The expenditure of work was measured by making the whole apparatus its own dynamometer. It was suspended so as to turn round the common axis of the stirrer and the motor. The resistance met with by the former tended to turn the apparatus in the direction of revolution of the latter. It was kept stationary by a weight attached to an arm exerting a measurable couple. The mean of 31 values ranging from 426.21 to 427.12 was 426.70 in kilogram-metres

per calorie, or 4.1857×10^7 ergs. For the normal scale of the hydrogen thermometer this would be 426.84.

A NEW and very convenient method of preparing acetylene gas is described by M. Maquenne in the current number of the *Comptes Rendus*. A short time ago the same chemist succeeded in preparing a comparatively stable compound of carbon with the metal barium, BaC_2 , by heating powdered retort-charcoal with barium amalgam in a current of hydrogen. Upon bringing this compound in contact with water a violent action was found to occur with evolution of almost pure acetylene gas. On account, however, of the troublesome nature of the operations of procuring barium amalgam and preparing from it the new compound, together with the very small quantities of the latter eventually obtained, this mode of preparing acetylene was only of theoretical interest, and not suitable as a laboratory method of preparation. M. Maquenne now describes a new process for preparing barium carbide, by means of which large quantities may very readily be procured in a few minutes, and from which correspondingly large volumes of acetylene may be derived. The principle of the method consists in reducing barium carbonate by metallic magnesium in presence of carbon. An intimate mixture is first made of barium carbonate prepared by precipitation, powdered metallic magnesium, and calcined retort-carbon. Convenient amounts are twenty-six grams of barium carbonate, ten and a half grams of magnesium, and four grams of charcoal. This mixture is then introduced into an iron bottle of about seven hundred cubic centimetres capacity, furnished with a tube, also of iron, thirty centimetres long and two centimetres internal diameter. The iron bottle is then heated in a gas furnace which has previously been raised to a red heat. At the expiration of about four minutes an energetic reaction occurs, accompanied by the projection of brilliant sparks from the mouth of the tube. The apparatus should then at once be removed from the furnace, the end of the tube stopped, and the bottle and contents rapidly cooled by the external application of cold water. The product may then be extracted, when it is found to consist of a mixture of magnesia with 38 per cent. of carbide of barium, a little excess of carbon, and a trace of cyanide formed at the expense of the atmospheric nitrogen. The reaction accords very closely with the equation:—



Carbide of barium may be preserved for an indefinite time in a dry atmosphere. It is a grey, porous, and very friable substance. When heated to redness in the air it burns with a vivid incandescence. It is also capable of combustion in chlorine, hydrochloric acid gas, and vapour of sulphur. In order to prepare acetylene from it the powder is most conveniently placed in a small flask fitted with a doubly-bored caoutchouc stopper, carrying a dropping funnel containing water, and a delivery tube. The moment water is allowed to drop the equivalent quantity of acetylene gas is evolved in accordance with the equation:—



The delivery of the acetylene may be regulated with great nicety by suitable adjustment of the stopcock of the dropping funnel. The acetylene thus prepared possesses the further advantage of being remarkably pure, containing 98 per cent. of C_2H_2 . It is interesting to learn that by allowing a stream of this pure acetylene to pass through a long heated glass tube for a few hours several grams of synthetical benzene have been accumulated by M. Maquenne.

THE additions to the Zoological Society's Gardens during the past week include a Macaque Monkey (*Macacus cynomolgus* ♀) from India, presented by Mr. W. F. Faulding; a Buffon's

Touracou (*Corythaix buffoni*) from West Africa, presented by Mr. A. L. Jones; two Double-banded Sand Grouse (*Pterocles bicinctus* ♂ ♀) from Senegal, presented by Mr. H. H. Sharland, F.Z.S.; a Gannet (*Sula bassana*), British, presented by Dr. Davis; a Roseate Cockatoo (*Cacatua roseicapilla*), a King Parakeet (*Aprosmictus scapularis* ♀) from Australia, presented by Mrs. Addiscott; four Alligators (*Alligator mississippiensis*) from the Mississippi, presented by Mr. John Terry; two Thick-billed Seed-eaters (*Oryzoborus crassirostris*), a Tropical Seed Finch (*Oryzoborus torridus*), a Saffron Finch (*Scyzalis flaveola*), a Bluish Finch (*Spermophila caerulea*) from South America, a Puff Adder (*Vipera arietans*) from West Africa, deposited.

OUR ASTRONOMICAL COLUMN.

COMET BARNARD (OCTOBER 12).—An *Astronomische Nachrichten* circular note gives the following elements and ephemeris, computed from observations made on the 16th, 17th, and 18th of this month:—

Elements.

$T = 1892 \text{ Nov. } 12^{\text{h}} 745 \text{ Berlin M.T.}$

$\omega = 168.49$

$\delta = 220.50$

$i = 21.39$

$\log. q = 0.03669$

Ephemeris Berlin Midnight.

1892.		R.A.		Decl.		Log Δ.		Br.
		h.	m.					
Oct. 25	...	20	6.6	...	+7.47			
27	...		13.5	...	6.51	...	9.6825	...
29	...		21.5	...	5.52			
31	...		29.8	...	4.51	...	9.6609	...
Nov. 2	...		38.7	...	3.47			
4	...		48.2	...	2.40	...	9.6377	...
6	...	20	58.3	...	1.29			

As the brightness at the time of discovery is taken as unity, it will be noticed that the comet is quickly gaining in intensity, the value for November 8 being 2.08 Br. Its position on the 31st lies in the southernmost part of the constellation of the Dolphin, forming very nearly an equilateral triangle with α Aquilæ and β Delphini.

DISCOVERY OF THREE NEW PLANETS BY PHOTOGRAPHY.—M. Perotin has communicated to the French Academy an account of the discovery of three small planets by M. Charlois, of the Nice Observatory, by the aid of photography. The apparatus employed consisted of an Hermagis portrait lens of 15 cm. aperture and 80 cm. focal length, mounted provisionally on M. Loewy's equatorial coude. The instrument was being employed for the photography of the region of the ecliptic. With exposures ranging from two hours and a half to three hours, the eight negatives obtained since September 12 cover a region 80° long and 10° broad, and show all the stars visible through the 38 cm. refractor. A careful examination of the plates reveals the presence of three unknown and eight known planets. The former, now known under the names 1892, D, E, and F, are all of about the twelfth magnitude.

RUTHERFURD MEASURES OF STARS ABOUT β CYGNI.—Mr. Harold Jacoby, in No. 4 of the *Contributions from the Observatory of Columbia College, New York*, presents us with the reduced results of the measures of the plates containing the group of stars surrounding β Cygni. The method of measurement was exactly the same as that employed in the case of the Pleiades plates, but that of reduction has received some slight modification. For instance, the measures of the eastern and western impressions have not been separately dealt with, but their mean has been taken, and the reduction continued, using this mean as a single observation. As the accuracy of these measurements depend on the exactitude of the scale value determinations to a very considerable extent, it is satisfactory to hear that this value has remained materially the same for a very long period. The largest and smallest values recorded in the Pleiades plates were 28".0167 and 28".0066, the mean value amounting to 28".0124, and it is